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"THE FEELING OF BEING STARED AT"—EXPERIMENTAL¹

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Summary

Experimentation with ten normal reagents to the extent of one hundred guesses each, as to whether they were being stared at during a fifteen-second interval, results in an astonishing approximation to the probability figure when the events are controlled by chance—namely, 50.2 per cent of right cases.

Introspective analysis reveals subjective factors that control the guessing and that confer upon guesses a strong feeling of certainty. These factors are sufficient to account for the commonness of the belief, and they are of the nature of incipient hallucinations and motor automatisms.

Introduction.—Titchener in an article in *Science*,² some years ago, stated that students in his junior classes believed they could feel anyone staring at their backs, that laboratory experiments proved the belief to be groundless, and that the belief is to be accounted for by 1. a natural nervousness resulting from anxiety about how one's back looks; 2, inhibition, due to the dictates of good-breeding, of the natural impulse to turn around to see if some one is staring; 3. some one sitting behind, whose attention was attracted by the signs of nervousness, is caught "staring." It occurred to the writer, who had undertaken a general research upon the telepathic problem, that it would be of interest to know 1. whether the belief above referred to is common with our students, also, 2. whether it is shared by the men as well as by the women, 3. what statistical results would yield in the case of a fairly large number of guesses by reagents who believe in the reliability of the feeling, 4. and what factors in the experience in guessing would correlate with the greater degrees of certainty with which the guess is delivered. These factors, obtained from the introspections, would seem to be not only the essential processes at work when the reagent has 'the feeling of being stared at,' but also the elements of experience accountable, in part, for the belief that the feeling may be relied upon; they would then furnish an explanation supplementary to that given by Titchener in general psychological terms. In case the

¹ This is a part of the experimental work carried on in "Psychical Research" (endowed by Thomas Welton Stanford of Melbourne, Australia) in the Department of Psychology, Leland Stanford Jr. University, during the year 1912-1913. Acknowledgments are hereby made to Dr. F. Angell and Professor Lillien J. Martin of the department for courtesies extended to the researcher.

² E. B. Titchener, "The Feeling of being stared at." *Science*, viii., 1898, 895-897.

'feeling' is instinctive, as is suggested by the phylogenetic origin proposed by Titchener, these factors would serve to set off the feeling, to develop it in definiteness, to make it frequently active, and to give confidence in its reliability.

Replies to a questionnaire from 146 students out of a class of 169 in General Psychology, showed that 68 per cent have "the feeling of being stared at, with the conviction that the feeling can be (more or less) relied upon." Students of both sexes share the belief; 47 per cent of the writers were men and 60 per cent of them stated the belief.

That this class was not exceptional in possessing the belief is shown by 95 returns from another class of 102 in psychology (Mental Hygiene): 86 per cent of these students shared the belief; 54 per cent of the writers were men, of whom also 86 per cent stated belief.

Method.—Ten students, ranging from sophomores to seniors, from the class in General Psychology, who held the belief, made one hundred guesses each. The experiments usually occupied the reagent three or four laboratory hours, given on as many days, one week apart. The conditions usual in the psychological laboratory, of quiet, regularity of time and procedure, etc., obtained.

The interval of 15" (20" for the first five reagents) for forming the guess was begun by a pencil-tap by the experimenter and ended by two taps. After announcing aloud "yes" or "no" the reagent wrote out introspections involving 1. condition of the mind during the interval; 2. the kind, vividness, temporal course, and spatial attributes, of the imagery; and 3. the grade and reason (if the grade was high) for the felt certainty of the guess. In order to avoid coincidence of similar mental tendencies in forming the series of experiments, the experimenter made up the series from a dice-box as guessing progressed. Upon recording the last guess he shook the box containing a die; if an odd number of spots were cast, he prepared to stare; if an even number, he prepared not to stare; and tapped off the interval in all other respects uniformly. Single experiments did not follow at a higher rate than one *per* minute; at the beginning of each reagent's work, until he became fairly critical in introspecting, they occupied from three to ten minutes each.

The reagent sat comfortably, with eyes closed and shaded with one hand, and with his back toward the experimenter. He knew that the series of experiments was controlled by the die-spots. When the experimenter stared, he 'stared hard' during the whole interval, 'willing' strongly that the reagent 'feel' it.

For reagents I-V the conductor of the research acted as experimenter; for reagents VI-X respectively there was for each a different experimenter, but of the same sex. Reagent I was the only man in the group.

Results.—The following table gives the results of both groups of reagents, and the averages.

TABLE I

Reagent	Not Staring		Staring		Total Right
	Total	Right	Total	Right	
I	51	28	49	22	50
II	45	25	55	26	51
III	62	23	38	20	43
IV	53	24	47	25	49
V	51	28	49	27	55
<i>Avg.</i>	<i>52.4</i>	<i>25.6</i>	<i>47.6</i>	<i>24.0</i>	<i>49.6</i>
VI	45	23	55	33	56
VII	56	21	44	23	44
VIII	48	25	52	26	51
IX	55	26	45	24	50
X	52	22	48	31	53
<i>Avg.</i>	<i>51.2</i>	<i>23.4</i>	<i>48.8</i>	<i>27.4</i>	<i>50.8</i>
<i>Grand Avg.</i>	<i>51.8</i>	<i>24.5</i>	<i>48.2</i>	<i>25.7</i>	<i>50.2</i>

Of the 1,000 guesses, 50.2 per cent were right (P.E., 1.78; M.V., 3.10); 47.3 per cent of the guesses when the experimenter was "Not Staring," and 53.3 per cent of the guesses when he was "Staring," were right. The die-spots came even 51.8 per cent of the 1,000 throws, conditioning this *per cent* of "blank" experiments.

Since six of the reagents guessed "yes" in excess of "no" (III. 18 times, IV. 8, VI. 10, VII. 16, IX. 6, and X. 22), while but three guessed "no" in excess of "yes" (I. 10, II. 8, VIII. 2), resulting in a general average of 6 "yes" guesses per 100 in excess of the "no" guesses, the excess of 53.3 per cent right guesses "when the experimenter stared" over the 47.3 per cent of right guesses "when the experimenter did not stare" is without significance; if half of the excess of "yes" guesses is deducted from the "Staring" experiments, the 53.3 per cent is reduced to 50.2 per cent. The total right guesses for each reagent is the significant figure. The limits are 43-56 and deviate from probability about equally; this size of deviation could be expected 322 times in 1,000.

Considering that theoretical probability is 50 per cent; that our result of 50.2 per cent ± 1.78 falls between it and the experimental probability found by Quetelet³ in 5,460 drawings from equal numbers of white and black balls (white balls 50.48 per cent); and that an experimental series of our own (frequency of odd numbers on the dice) for the same number of experiments gives 51.8 per cent; we may conclude that no cause besides chance has been found working toward right cases.

There are other ways in which the results may be distributed to show that there is no conspicuous "bunching" of right cases in any of the rubrics, and that therefore the consistency of mutual support adds to the certainty that there has been no influence beyond chance operative toward right guesses.

In some of the experiments, the distance between the experimenter and reagent was varied for the purpose of finding the influence of

³ Quetelet, *Lettres sur la théorie des probabilités*, p. 57.

distance upon any factor above chance that might be found to be working for right guesses. The following table gives the gross averages and the per cents of right guesses for the various distances in meters.

TABLE II

First Group

Distance	1	2	3	4.6	6	10 meters
No. Guesses	80	140	80	60	50	80
Per Cent Right	46.3	49.3	55	45	54	51.3

Second Group

Distance	2	4	6 meters
No. Guesses	160	100	20
Per Cent Right	45	53	50

But, as Venn says, anything may happen in a chance series, and it may be charged that all the guesses given with a low degree of certainty (a feeling that the guess stands a small chance of being right), by a freak of chance, may have run greatly under the probability-figure for right guesses, and may thus have counteracted in our final per cent for each reagent the influence of a force working for right guesses to be found in those guesses given with a stronger feeling of certainty.

A tabulation of right and wrong guesses under their correlated grade of certainty (recorded in the introspections), however, shows no significant advantage on the part of any reagent for his more certain over his less certain guesses. The following table shows a total of such values from reagents whose grading was definite.

TABLE III

Guesses Given with Various Grades of Certainty

Grades	A	B	C	D	"Pure Guess"	Total
No. Guesses	15	332	264	61	36	708
Right	10	166	129	33	22	360
Per Cent Right	67	50	48.8	54	61	50.8

It seems pretty clear that, if there is a capacity to be aware of being stared at, it is not, as Richet thought of telepathic phenomena, shared to a slight extent by normal persons, but must be confined, as James suspected,⁴ to subjects whose sensibilities have been augmented beyond a "critical point" through hypnosis or other abnormal conditions.

Our reagents who had more or less confidence in their ability did not under the favoring conditions of our experimentation prove their power. Their belief must be largely based upon those subjective factors which enabled them to deliver some guesses with a strong feeling of certainty, and partly perhaps upon undue consideration of cases in which they have "verified" their feeling by catching the starrer.

⁴ *Proceedings Society for Psychological Research*, 1896-7, 12:4.

Qualitative Results.—Introspections show in what manner guesses are determined, and reveal the factors of experience that contribute to the guesses a feeling of varying grades of certainty that the guess is right.

Certainty is contributed to the guess by (1) some attribute or content of the imagery, (2) kinaesthetic sensations or images, or (3) inferences from sound sensations resulting from the experimenter's manipulation of apparatus, etc., or from other subjective processes.

(1) When the content of visual imagery involved the attitude of the experimenter, it determined the guess according to whether the experimenter was looking straight ahead or looking away. When this imagery was vivid, or if it appeared with facility (liveliness) and at the beginning of the period, or was persistent or recurrent, the guess was given with a feeling of greater certainty. (Reagent I said, "when the direction of the look is seen from the face only, I give the guess Grade C; if from the eyes, Grade B or A.")

The visual imagery may be weak, and when it appears at all be accepted as a sign of being stared at. For Reagent II, visual imagery of the experimenter or of a school-room, in which she first experienced vividly the feeling of being stared at, yielded a "yes" guess.

Sometimes the content of the visual imagery was probably suggested by auditory impressions of the experimenter's movements when the latter were not pronounced enough to be singled out for "inferences" as treated in Section (3).

Those who depended largely upon visual imagery were Reagents I, IV, V, VIII, IX, and X.

(2) Some reagents were much occupied with kinaesthetic impressions during the interval. Thus for reagents III, VII, and VIII, the most characteristic cue for a highly graded guess was an almost irresistible impulse to turn around, or a tension of muscles in the neck and shoulders; for X it was the kinaesthetic sensation in the right temple; sometimes the kinaesthetic impressions were not localised, but were indicated by "a feeling of restlessness;" Reagent VIII also speaks of a "feeling of discomfort" with a "desire to turn."

The imagery of Reagent V involved a visual or at least a spatial element consisting of an imaged straight line or beam from the experimenter's eyes to the back of her head; and a marked kinaesthetic impression, leading to "yes" guesses given with a high degree of certainty, was tension of the eye-muscles toward this line. "Attention and eyes drawn toward line," was a frequent introspection for guesses given with a higher grade of certainty. She also has clear visual imagery of the experimenter either accompanying this kinaesthetic impression, and including the "line," or of the experimenter's face turned away. The visual element gave way, in the course of her experimentation, to the kinaesthetic as a guide to the more certain guesses. Reagent VII also mentions this "line" in her visual imagery of the experimenter, and speaks of a "feeling of connection."

The kinaesthetic impressions involving restlessness, desire to turn, strain in the neck-muscles and in the eyes, were shared by other reagents who had other modes of imagery from which they made their guesses; as, V, VIII, IX.

More subtle kinaesthetic imagery was sometimes evidently of influence in determining the guess. Reagent IX "felt like answering a call of her name;" and VIII recorded a "feeling of being alone" which was a positive determinant for a "no" guess; and of a

"feeling of being criticized," or a "feeling of nearness to the experimenter," both of which yielded "yes" guesses.

(3) Inferences were sometimes drawn by the reagent from sounds of the experimenter's manipulation of apparatus or his conduct of the experiment. After shaking the dice-box, the experimenter waited until the second-hand was coincident with a five-second dial-mark before he tapped. Reagent I noticed variability in the length of this interval, and inferred that longer intervals were caused by preparing "to stare;" and he confidently gave for these cases "yes" guesses; he sought for a basis for inference when at a point in his series impressions failed to come during the interval. Other reagents noted in the pre-period a sound of movement from the rustling of clothing, and inferred that the head was being raised "to look;" when such impressions came within the interval, the reagent inferred that the experimenter was not looking. Reagent VIII "knew from her movements" the experimenter was not looking, and also inferred that "harder taps" were signals for a "yes" guess.

Even when such impressions are not used in "inferences" they may conceivably influence the guessing by being taken advantage of subconsciously. It is impossible for the experimenter to maintain perfect uniformity in his conduct of the experiment, which involves, among other things, length of the various intervals, breathing, manipulation of the dice-box, intensity and accent in tapping, slight bodily movements, etc. Great effort was made, however, to maintain uniformity, and this may in part account for the lack of an excess of R judgments.

Inferences may also be based upon hypotheses, and depend in their outcome upon subjective conditions; *e.g.*, Reagent VII inferred from internal distraction that E was not staring, or the distraction would have been overcome; and entire absence of impression was inferred to mean that none was sought to be made.

Other tendencies were also noted: "What did I answer last" influenced Reagent II, who was obviously endeavoring to keep positive and negative guesses about equally frequent. She also occasionally made up her mind, Marbe-fashion,⁵ to say "yes" next time; but since the series was not voluntarily made by the experimenter, coincidence due to like tendencies of the two minds was excluded. And when she was "tired and bored" she wanted to say "no," as a general protest to further experimentation.

Conclusion.—Our conclusion, with respect to normal reagents, is (1) that the belief in "the feeling of being stared at" is quite common (shared by over half of the university students); (2) that experiment shows it to be groundless; (3) that there is an explanation supplementary to that mentioned by Titchener (nervousness, attracting attention, turning, catching the gazer) for the existence of the belief, lying chiefly in *attributing an objective validity to commonly experienced subjective impressions in the form of imagery, sensations, and impulses*. This is a tendency which, under favorable conditions, works itself out in Hallucinations and Motor Automatism, and it seems to be a common trait in normal adults.

⁵ K. Marbe, Ueber das Gedankenlesen und die Gleichförmigkeit des psychischen Geschehens. *Zeitschr. f. Psychol.*, lvi., 1910, 241-263.